



CHAPTER 1

Product Overview

This chapter describes the Catalyst 4900M switch, as well as system features and components.

This chapter contains these sections:

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- [Catalyst 4900M Switch Software Features, page 1-6](#)
- [Hardware System Features, page 1-6](#)
- [Switch Components, page 1-7](#)

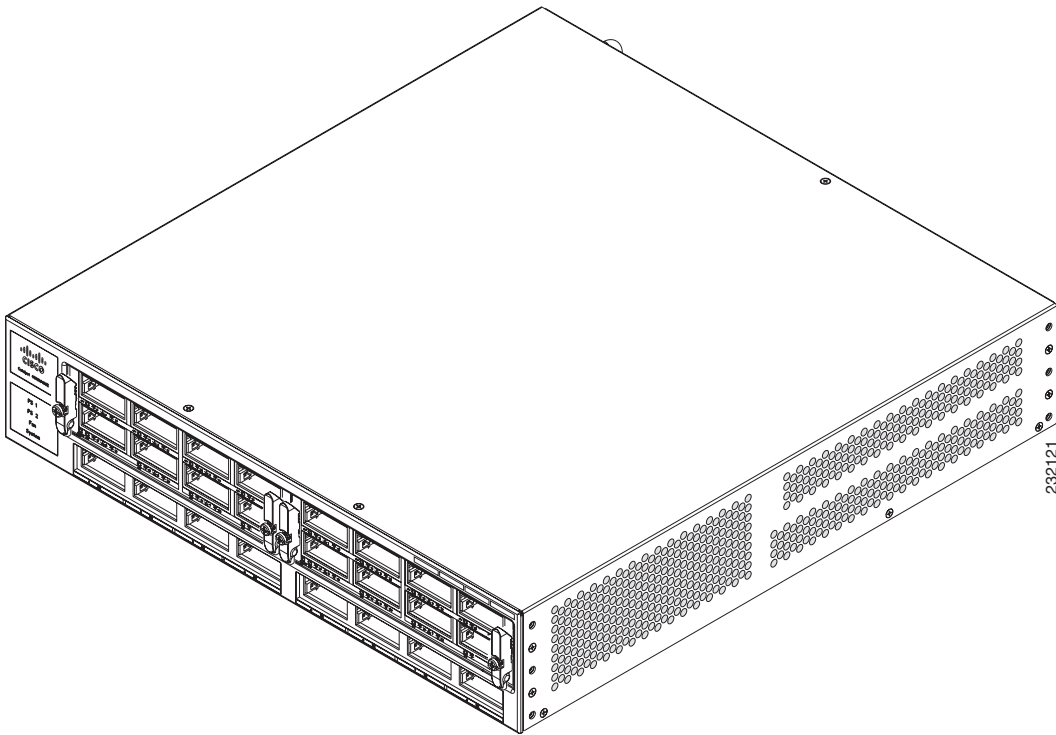
Catalyst 4900M Switch Applications

The Catalyst 4900M switch (see [Figure 1-1](#)) is designed for top-of-rack server aggregation. It simplifies the transition from 1 GB to 10 GB attached devices in the data center. The Cisco Catalyst 4900M is a top of rack Ethernet switch optimized for mixing 10/100/1000 and 10 Gigabit Ethernet access devices. It is a fixed Cisco IOS based Layer 2+ switch with 8 fixed wire speed X2 ports on the base unit with 2 optional half card slots. The half card slots can accommodate the following cards in any combination:

- 20-port wirespeed 10/100/1000 (RJ-45) half card
- 4-port wire speed 10GbE (X2) half card
- 8-port (2:1) 10GbE (X2) half card (Twin Gig compatible)

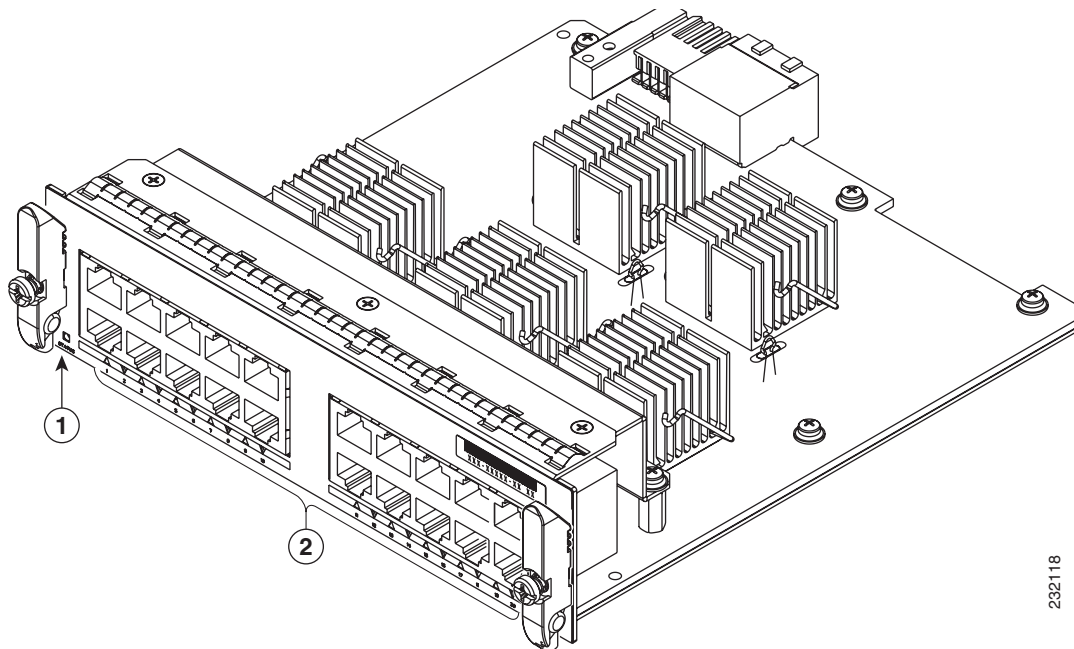
The half cards provide a wide variety of combinations of Gigabit Ethernet and 10 Gigabit Ethernet media types. The half slots also provide investment protection for further additions of 1 GE and 10 GE media.

Figure 1-1 *Catalyst 4900M Switch*



The modules that fit into the open slots are:

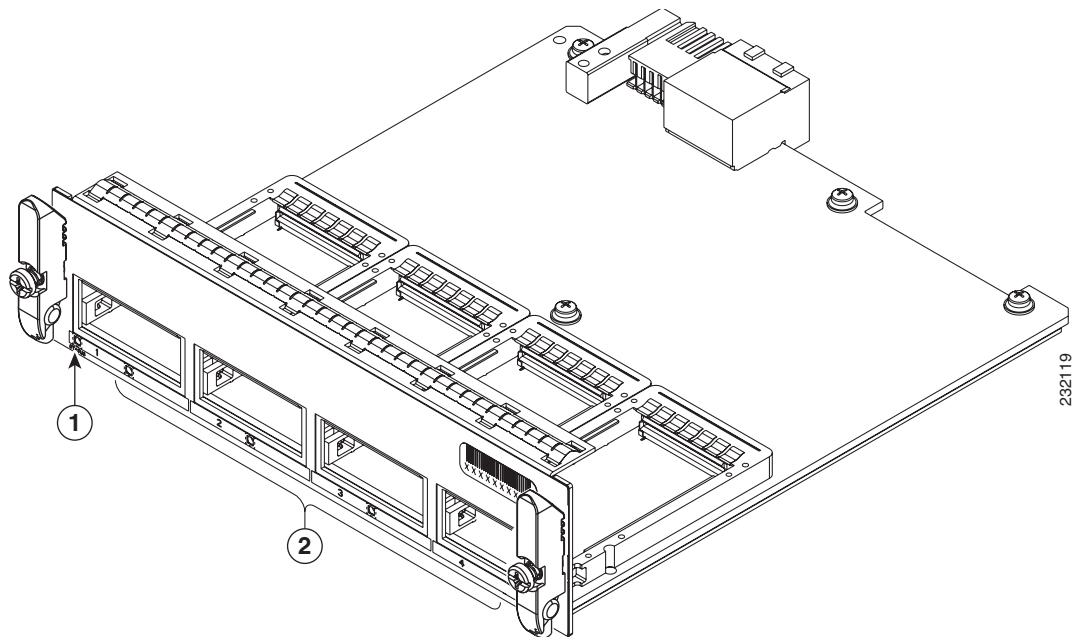
- 20-port 1 GE RJ-45 (WS-X4920-GB-RJ45=)
- 4-port X2 wire speed 10 Gigabit Ethernet (WS-X4904-10GE=)
- 8-port X2 2:1 oversubscribed 10 Gigabit Ethernet (WS-X4908-10GE=)

Figure 1-2 20-Port 1 GE RJ-45 (WS-X4920-GB-RJ45=)

1	Module Status LED	2	Port LEDs
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Specification	Description
Module type	10/100/1000BASE-T Fast Ethernet switching module
Port duplex mode	Half or full duplex mode
Port speed	10, 100, or 1000 Mbps
Number of ports	20
Connector type	RJ-45
Cable type	Category 5
Power over Ethernet	Not supported

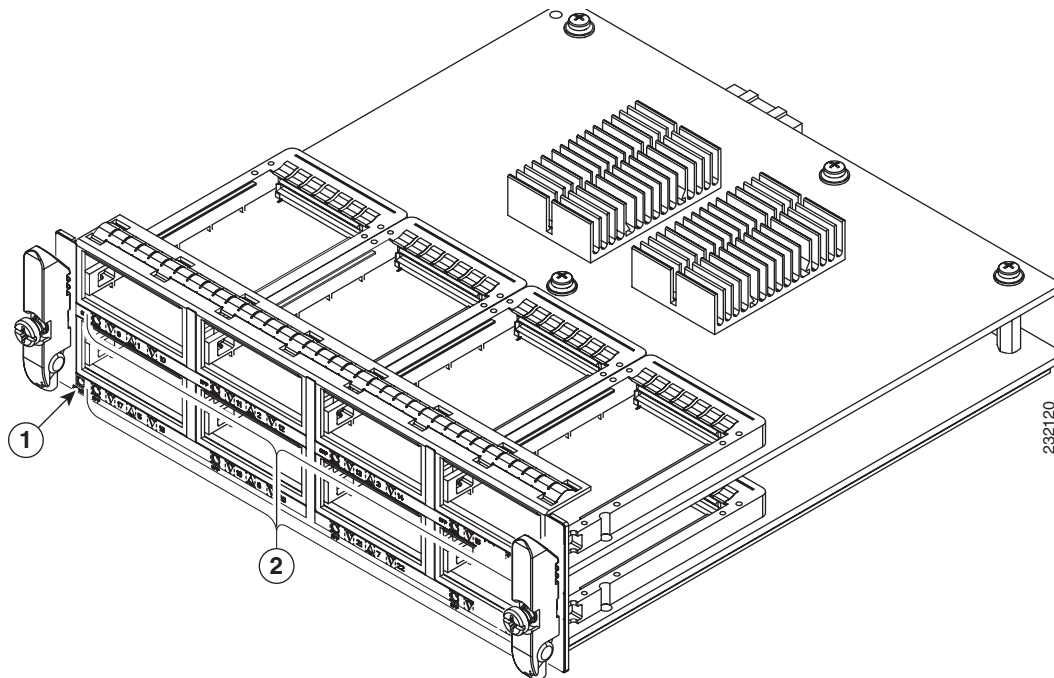
Figure 1-3 4-Port X2 Wire Speed 10 Gigabit Ethernet (WS-X4904-10GE=)



1	Module Status LED	2	Port LEDs
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Specification	Description
Module type	10 Gigabit X2 fiber Ethernet switching module
Port duplex mode	Full duplex mode
Port speed	10 Gbps
Number of ports	4
Connector type	SC type
Cable type	MMF or SMF

Figure 1-4 8-Port X2 2:1 Oversubscribed 10 Gigabit Ethernet (WS-X4908-10GE=)



1	Module Status LED	2	Port LEDs
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Specification	Description
Module type	10 Gigabit X2 or TwinGig fiber Ethernet switching module
Port duplex mode	Full duplex mode
Port speed	10 Gbps or 2 Gbps
Number of ports	8
Connector type	SC type
Cable type	MMF or SMF

**Note**

When using TwinGig and X2 transceivers on this module, keep them grouped in pairs as follows: 1-2, 3-4, 5-6, 7-8. Inserting a TwinGig or X2 transceiver in any port will affect the capabilities of its partner port, and both will be set to handle the same type automatically. Mixing within a port group will not work. As an example, you would not be able to have an X2 in port 1 and a TwinGig in port 2 and expect both of them to function.

The Catalyst 4900M switch has a 320-Gbps, nonblocking, full-duplex switching fabric, providing 250 million packets-per-second of switching capacity for high-speed applications. The Catalyst 4900M chassis has eight 10 Gigabit Ethernet ports and other ports as configured.

A removable automatic variable speed fan tray for low-noise operation at room temperature and removable and redundant 1000 W AC or 1000 W DC power supplies provide fault-tolerance protection for the switch. See the [“Connecting Power to the Catalyst 4900M Switch”](#) section on page 3-11.

Catalyst 4900M Switch Software Features

For up-to-date information on software features, refer to the release notes and software configuration guide for your software release.

Hardware System Features

The Catalyst 4900M switch is a high-performance dedicated Ethernet switch that fully integrates into the Catalyst family of switches using Catalyst 4500 series system software.

The following is an overview of the Catalyst 4900M hardware features:

- Eight 10 Gigabit Ethernet uplink ports using X2 interfaces
- Serial console management port using an RJ-45 interface
- A removable automatic variable speed fan tray for low-noise operation at room temperature
- Redundant and removable 1000 W AC or DC power supplies

- 512-MB SDRAM (fixed)
- 128-MB embedded Flash memory
- 360-Gbps switching capacity, 250 million packets-per-second actual forwarding rate
- EtherChannel at 10/100/1000 Mbps, as well as 10 Gbps
- Host and device USB 2.0 ports
- Compact flash memory slot

Switch Components

This section describes the Catalyst 4900M hardware components.

Traffic Ports

There are eight 10-Gigabit Ethernet uplink ports using X2 interfaces and other traffic ports depending on the switching modules installed.

TwinGig Modules

On the WS-4908-10GE modules only, TwinGig converter modules may be used in place of X2 modules if you need to provide 1 GB SFP connections. When you insert the TwinGig into one port, its neighbor automatically converts to 1 GE interfaces whether it has a TwinGig installed or not, so you need to group your TwinGigs next to one another. The neighboring port to a TwinGig port cannot support an X2.

Installation documentation for Cisco TwinGig converter modules can be found at:

http://www.cisco.com/en/US/docs/switches/lan/catalyst3750e_3560e/hardware/install/notes/1757202.html

Rear Chassis Connections and Features

The Reset button is used to restart the switch. Use a paper clip or other small, pointed object to press the Reset button.

A console serial port (RJ-45) provides for switch management using standard console equipment. (See [Figure 1-5](#).) A connector pinout table is provided in [Appendix A, “Specifications,”](#) for the console and management ports.

The Management port on the rear panel offers the same TCP/IP based management services available via inband access (telnet SNMP etc.). IP address configuration via BOOTP is supported on the Management port; it also supports image download to the switch.

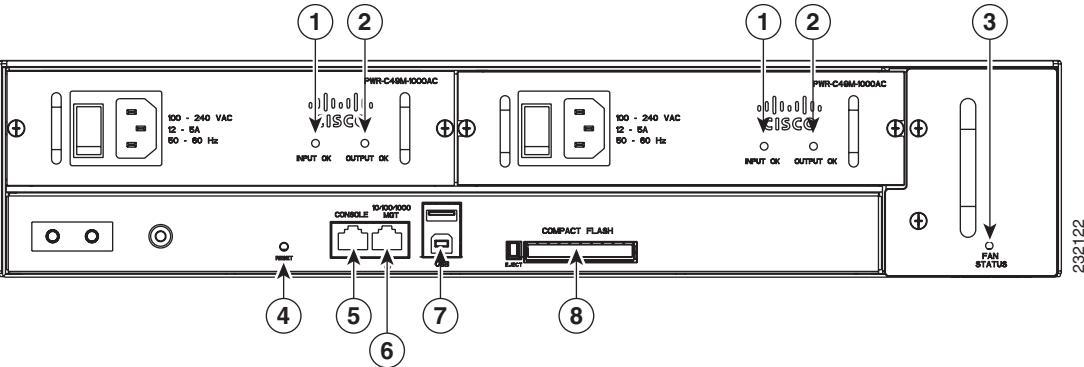
A USB connector is provided for future expansion.

The Compact Flash port accepts both 64-MB and 128-MB Type 1 compact Flash cards. You can use it for file transfer tasks such as loading a new software image. The Flash card is optional and can be obtained from third-party suppliers.

For more information, refer to *Using the Compact Flash on the Catalyst 4500 Series Supervisor Engines* at the following URL:

http://www.cisco.com/en/US/docs/switches/lan/catalyst4500/hardware/configuration/notes/OL_2788.html

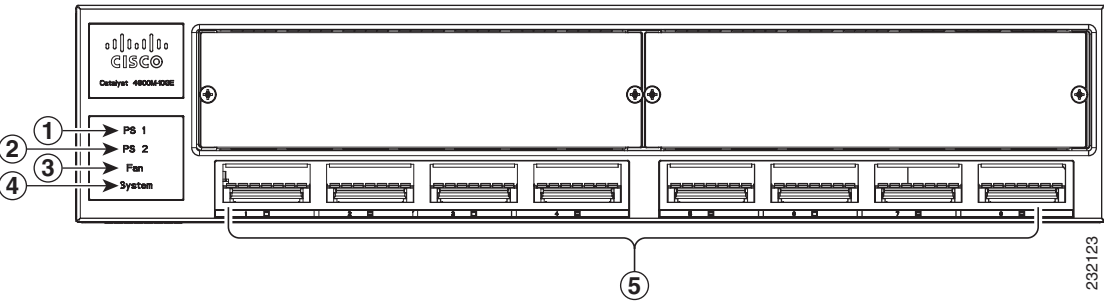
Figure 1-5 View of the Rear Panel



1	Input OK (power supply)	5	Console port
2	Output OK (power supply)	6	Management port
3	Fan Status LED	7	USB connection
4	Reset button	8	Compact Flash slot

Front Panel LEDs

Figure 1-6 Front LEDs



1	PS1 LED	4	System LED
2	PS2 LED	5	10Gig port LEDs
3	Fan LED		

The LEDs on the front and rear panel of the Catalyst 4900M switch (see [Figure 1-5](#) and [Figure 1-6](#)) provide status information as follows:

- System LED indicates the operating state of the Catalyst 4900M switch.
- PS1 LED indicates the internal power supply status.
- PS2 LED indicates the internal power supply status.
- FAN LED indicates the fan tray status.
- A link status LED is below the 10-GB uplink ports.

A description of the LED functions is provided in [Table 1-1](#).

Table 1-1 LED Descriptions

LED	Color or State	Description
System (front)	Green	At startup, the Catalyst 4900M performs a series of diagnostic tests:
	Red	All tests pass
	Flashing	A test other than an individual port test fails
	Yellow	System boot or diagnostic tests in progress
	Off	System is in rommon mode or a power supply has failed Switch is disabled
CON (rear)	Green	10/100 BASE-T console port is in link-up state
	Off	10/100 BASE-T console port is in link-down state or not connected
		There are no blinking, red, or yellow states for this port
MGT (rear)	Green	10/100/1000BASE-T Management port is in link-up state
	Off	10/100/1000BASE-T Management port is in link-down state or not connected
		There are no blinking, red, or yellow states for this port

Table 1-1 **LED Descriptions (continued)**

LED	Color or State	Description
Port (front)	Green	Port is operational
	Yellow	Port is disabled by user
	Flashing yellow	Power-on self-test indicates faulty port
	Off	No signal detected or link configuration failure
Fan (front and rear)	Off	No power to the switch or fans (the tray may not be plugged in especially if one or more of the power supplies status LED is green)
	Green	Fan tray operational
	Red	Fault detected
PS1 and PS2 (front)	Off	No power to the PS
	Green	Operational ¹
	Red	Fault detected or the on/off switch is set to off while the power supply is plugged in

1. If either LED is green and the other is OFF the power supply is probably not plugged in. If it is red, the supply is either plugged in and not switched on or it is faulty. It may be necessary to interrogate the system for further status using the CLI.

Chassis Cooling

**Note**

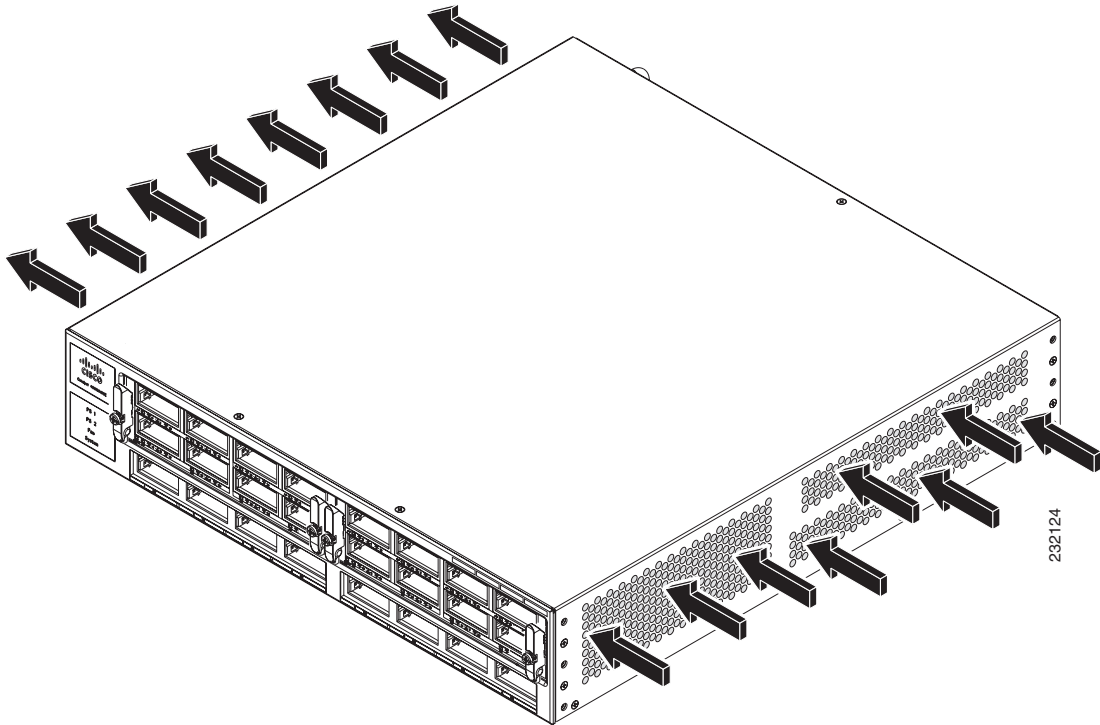
For environmental specifications, see [Chapter 2, “Site Planning.”](#)

The hot-swappable system fan tray provides cooling air for the internal chassis components. The fans exhaust air to the left, and fresh air is drawn in from the right side of the chassis.

**Caution**

When the fan tray is removed, internal circuitry is exposed that should not be touched by tools or fingers. The system should not be left operating without a fan tray for longer than is necessary to replace a faulty fan tray with a new one.

[Figure 1-7](#) shows the direction of airflow going in and out of the switch.

Figure 1-7 Catalyst 4900M Airflow

There are five fans in the fan tray. If an individual fan fails, the other fans continue to run. Sensors monitor the internal air temperatures. The number of fans in operation and their speed varies according to the internal temperature for the quietest operation possible. If the air temperature exceeds a desired threshold, the environmental monitor displays warning messages.

Power Supplies



Note

For complete power specifications for the Catalyst 4900M switch, see Appendix A, “[Specifications](#).”

The Catalyst 4900M switch has two redundant internal 1000 W AC or 1000 W DC power supplies.

The internal power supplies have individual power cords and status LEDs (PS1 and PS2 on the front panel). There are also LEDs on the power supplies that show status for the input (Input OK) and output (Output OK) currents. A power cord is used to connect the power supplies to the site AC power source. There is a power switch on the AC Catalyst 4900M switch power supplies; AC power is present when a power cord is plugged into a power supply and the switch is set to the On position. DC power supplies do not use a power supply cord or have an on/off switch.

The switch starts with only one power supply plugged in, but redundant failover and load sharing is not available in this configuration. Cisco recommends that you always connect both power supplies to separate AC or DC circuits for optimal power reliability.

For safety reasons, the AC power supply must be switched off and unplugged before it is removed from a chassis or inserted into a chassis. DC supplies should have power shut off from the source before they are removed.

If only one power supply is used, you must use the blank faceplate supplied to cover the empty power bay.

Environmental Monitoring of the Power Supplies

Using the environmental monitoring and reporting functions, you can maintain normal system operation by resolving adverse environmental conditions prior to loss of operation.

Each power supply monitors its own temperature and output voltages. The Catalyst 4900M switch senses the operating condition of the power supply and reports status through software.

Power Management for the Catalyst 4900M Switch

You can select AC or DC power supplies for your switch. The Catalyst 4900M switch supports the following power supplies:

- 1000 W AC
- 1000 W DC

A redundant power supply can be identified and diagnosed by a running system regardless of its input status. AC and DC supplies are interchangeable.

Power Management Modes

The Catalyst 4900M switch supports the redundant power management mode. In this mode, if both power supplies are operating normally, each provides from 20/80 to 45/55 percent of the total system power requirements at all times. If one power supply fails, the other unit increases power to 100 percent of the total power requirement.

Serial Number Location

Figure 1-8 shows the location of the serial number for your switch.

Figure 1-8 **Catalyst 4900M Serial Number**

